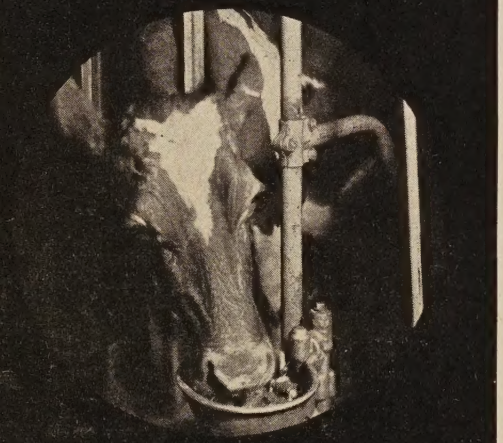


Planning YOUR FARM WATER SYSTEM

WATER is the lifestream of farm production. More water means that cows give more milk; hogs, cattle and other livestock put on weight faster, gardens grow more vegetables, hens lay more eggs, and poultry grow larger.

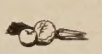
But the use of more water on the average farm has meant more work . . . more time spent pumping, hauling and distributing water not only to livestock and gardens but to clean dairy barns and other outbuildings, and to keep the kitchen and home supplied.

Modern production methods and modern living make this labor unnecessary. A properly installed farm water pressure system, including a kitchen sink, takes hours of work from a farm family's day, increases production and profits—makes life easier!

A farm water system works better and more efficiently if it is carefully planned for the job it is to do. Note: Although available supplies of plumbing materials for home use are still short, and in some cases unavailable, planning of an *entire* water system for farm and home is advisable, and this leaflet contains some suggestions that will be helpful to those planning such a system.

FACTS About Farm Water Needs—

Milk is 87% water.

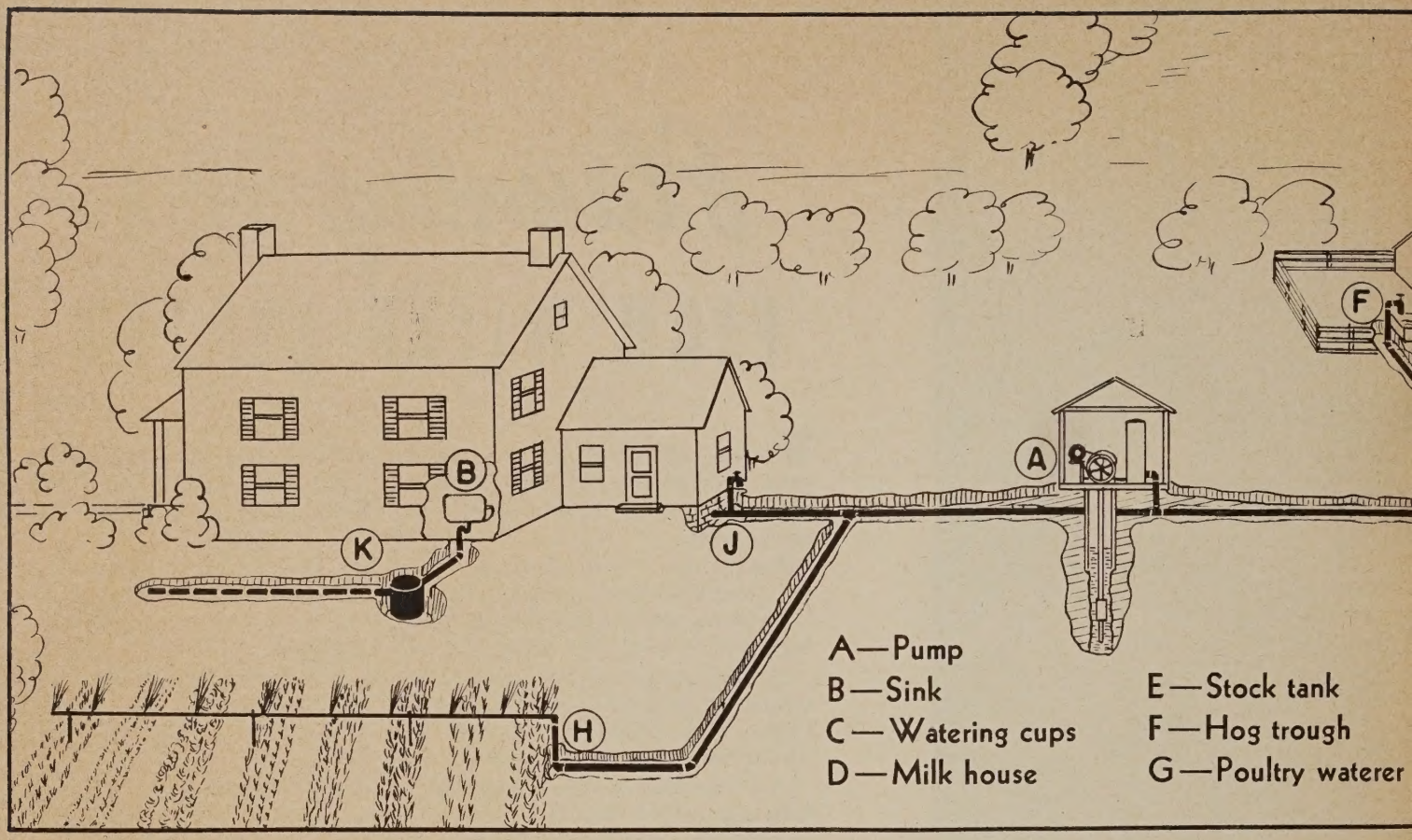


Vegetables are from 80 to 97% water.

Eggs are 65% water.

Meat is about 60% water.

A horse or fat steer needs 80 pounds of water a day—about 10 gallons. A cow needs about 25 gallons.
A pig needs 1.200 pounds of water to round out its weight —160 gallons.
100 chickens need 40 pounds of water a day—5½ gallons.



FOLLOW THIS WATER

Make System Large Enough

JUST as a wiring system should be large enough to accommodate all future electrical loads that may be added and flexible enough so that circuits may be added to it easily, a farm water system should have enough pumping capacity for all future needs.

A farm family may have demands for water in later years not foreseen today — a complete plumbing system, for example. Although it is important that a pump not be installed of greater capacity than the well which supplies the water; it is also important that the pump be large enough for present and future water needs. It is a good idea, therefore, to be certain that the well itself will be able to meet future predictable needs.

A minimum pumping capacity for average farm use is 350 gallons per hour, or the equivalent of the amount of water which will go through a ¾-inch faucet at 40 pounds pressure, per hour. At that capacity and with average use, the pump will be running from 1 to 1½ hours per day, at an electrical cost of a few cents per day. (See chart of water needs to determine capacity.)

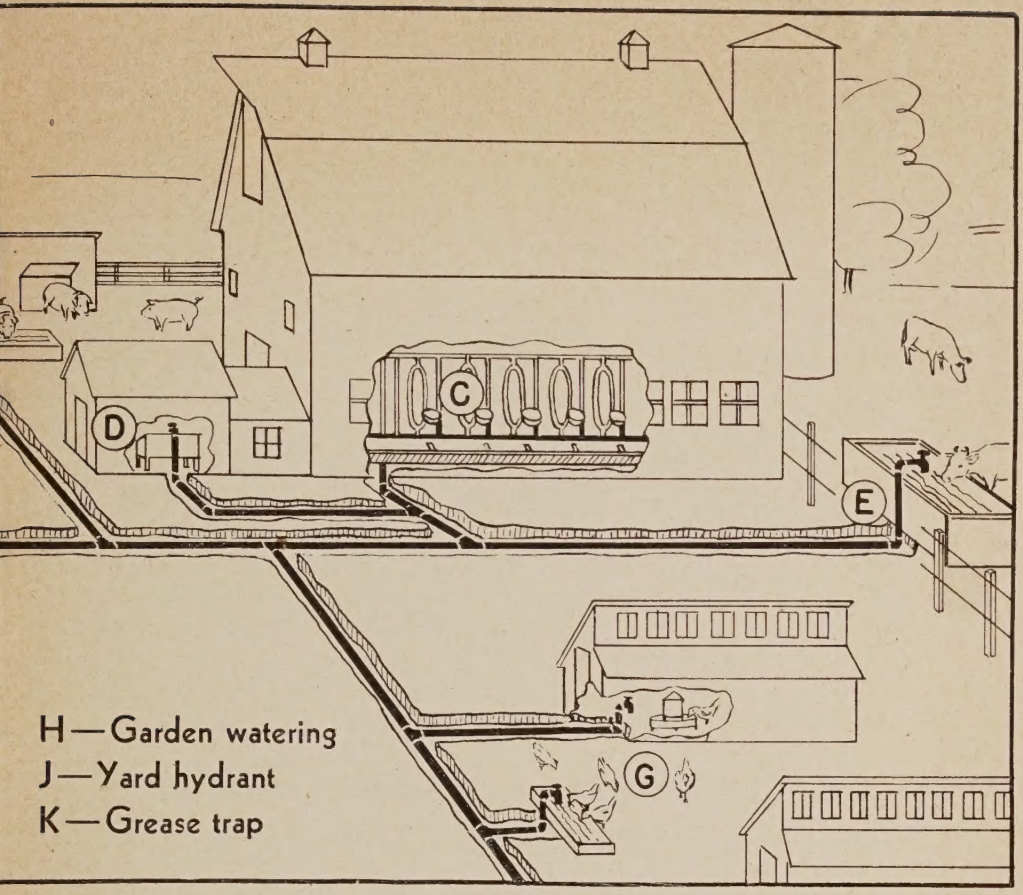
The size of the tank depends upon pumping requirements, and upon the size of the motor operating the pump. A 42-gallon tank is usually the best minimum size for a 350 G.P.H. pumping system. However, if the flow of the well is slow, it may be advisable to install a larger tank, permitting a smaller pump that will take a longer time to fill the tank, thus creating a larger active water supply. A 42-gallon tank will have an active supply of about 8 gallons of water, which means that 8 gallons can be used before the pump starts again.

What Kind of Pump?

One of the first questions to be answered in development of a pressure water system is the type of pump to be installed. Where the source of water supply is a well or body of water that stands at a depth of 22 feet or less below ground level, when the pump is in operation, a shallow-well pump may be installed to draw up water by suction. However, if the depth of the supply is greater than 22 feet, a deep-well pump should be used. This type of pump is mechanical in operation, rather than suction. (At higher altitudes, deep-well pumps must be installed for water levels at less than 22 feet.) To be sure you're right, consult your pump dealer or co-op on the proper type of pump to install.

Where the Pump Should Be Installed

Location of the water supply will in most cases determine the location of the pump in relation to the house. Most shallow-well pumps will be installed in the basement of the dwelling. This is advisable for weather protection. Deep-well pumps, because of



SYSTEM PLAN

their mechanical operation, must be installed above the source of supply, if they are of the plunger type. A jet pump is recommended for deep wells up to 70 feet in depth. Shallow-well pumps should also be installed at the water source if the distance to the dwelling and buildings to be served is too great.

If the pump is installed at the water source, it will be necessary to force the water to its destination, using the pressure at the tank. In some cases it may be necessary to use larger pipes for this purpose. Consult your pump dealer or service man on the size of pipe and depth of well for proper installation.

Well Housing and Protection

When the pump is installed away from the well, a trench is dug below the frost line from the well to the point of entry to the house, and a horizontal pipe is laid from the well pipe to the pump. Consult your local dealer as to whether this line must be enclosed in a casing and sealed with a sanitary seal similar to that with which the pump itself is sealed.

When the pump is installed at the well, a pit can be dug large enough to hold it, and at depth sufficient to be frost proof and weatherproof, or a weather-tight pump house provided. If a pit is used, it is suggested that the pump be installed in the pit. A 7′ by 7′ pit is usually large enough for a person to enter to make repairs and wash the pit. The sides and top of the pit must extend well above the ground and walls must be of cement, brick or stone to prevent seepage into the well, and a drain installed in the bottom of the pit for the same purpose. The manhole (cover) of the pit should be of cement or other weather tight material, although wood may be used for the roof.

It is important to allow entrance of air to the pit by an air vent, to permit circulation and build up air pressure, unless the roof of the top of the pit is of wood.

The same sanitary seals are required for deep-well as for shallow-well installations.

Laying Out the System

The most important thing to consider in laying out the pressure system is the uses to be made of the water—now and in the future.

When it is determined to what uses the water will be put, it is possible to total the gallonage and thus arrive at the capacity of the pump to be installed and the size pipe to be used. Again, remember — plan *now* for the total future needs of your farm and home. In jointing pipes, be sure to use cutting oil or lard oil on ends of pipe before threading. Apply white lead on the threaded end of the pipe to be screwed in, not on inside of fitting.

Farm Needs and Installations

Barn—Water under pressure is used in the dairy barn for drinking cups and for washing down the barn, as well as for fire protection. It is important to have sufficient hydrants for the two latter purposes.

Dairy House—In addition to a hydrant inside the dairy house for scalding vats, floor washing and for other sanitary purposes, it is advisable to install a frost-proof hydrant on the same connection outside the house for filling

• Plan your system large enough in every detail for future needs — size of well, size of pump, size of pipe. Don't be caught with too small a water system.

Make sure that your system strictly meets all local sanitary requirements. Health of your family and livestock depends on it.

Make your pump house well insulated and large enough for you to work on equipment. Plan for a garden watering system.

tractor radiators, washing mud from wheels and other barnyard purposes. This installation will save many hours of valuable time and much labor.

STOCK TANKS—Be sure to bury the pipe from the pumphouse to stock tanks below the frost line. An antifreeze hydrant should also be used for filling the tanks. By using an automatic float control (which can be homemade), it is possible to maintain water level at sufficient height for stock to drink at all times. In freezing weather, part of the tank may be shut off by a wooden gate or partition and a water heater inserted to prevent ice from forming.

POULTRY—Bury the pipe line below frost line, install shut off valves to ward off freezing. One automatic watering device is sufficient for each 50 hens in a laying house, as the hens will drink frequently but not much at a time. It is advisable to have a portable and automatic drinking device which can be moved from one part of the hen house to another as needed, and which will give a constant supply of cool, fresh water. A heating device for warming the water is also advisable to maintain high production in cold weather. And in warm weather water can be piped to the range, by overhead line or on the ground.

IRRIGATION — It has been estimated that overhead irrigation uses from 40 to 60 gallons of water per minute per 100 feet of irrigation. The total amount of water needed will depend upon the soil type as well as climatic conditions, but it will take about 28,000 gallons to flood an acre with an inch of water. Sprinkler systems and porous hose are alternate types of irrigation to overhead pipe lines.

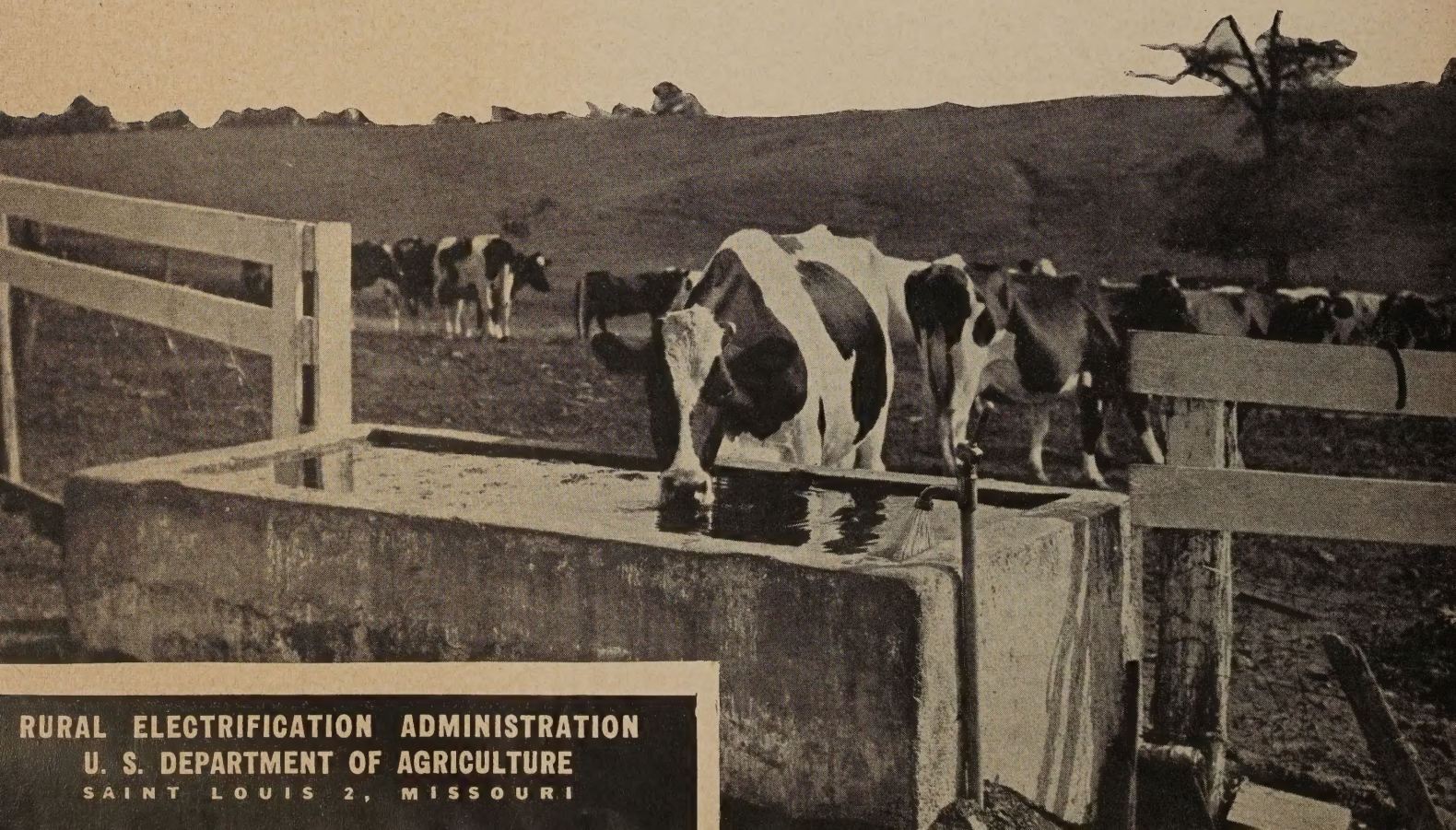
Drain From Sink

It is necessary to install a grease trap in the line of tile running from the kitchen sink to drain into the soil, to prevent grease and other solids from collecting in the soil. The line should be of 4″ farm drain tile and should be laid within 16″ of the surface if frost conditions will permit. This depth will permit bacteria from the air and soil to be carried into the tile to act on the waste matter. In tight soil the tile should be surrounded by gravel, and the tile should always end in gravel, not in an earth pit, as waste matter will collect in such a pit if it is dug, and possibly contaminate some nearby water source.

The tile should be laid at a slope of about 3″ per 100 feet in tight soil and from 6″ to 9″ in sandy soil. It should extend at least 75 feet beyond the grease trap, although the latter may be conveniently near the house. It is important that the outlet of the grease trap be not farther than 16″ from the surface of the ground.

This leaflet should be used in conjunction with the leaflet, "Care of Your Electric Water System," copies of which may be obtained from your co-op or direct from the Rural Electrification Administration, St. Louis 2, Missouri.

RURAL ELECTRIFICATION ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE



RURAL ELECTRIFICATION ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE
SAINT LOUIS 2, MISSOURI